

FIGURE 1

Title: ENDPOINT TRANSMITTER AND POWER GENERATION

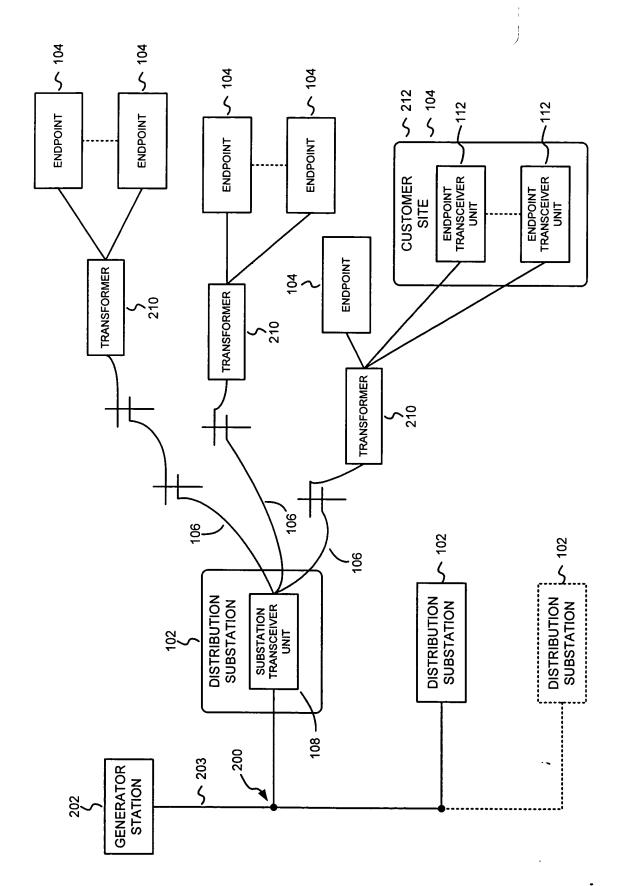
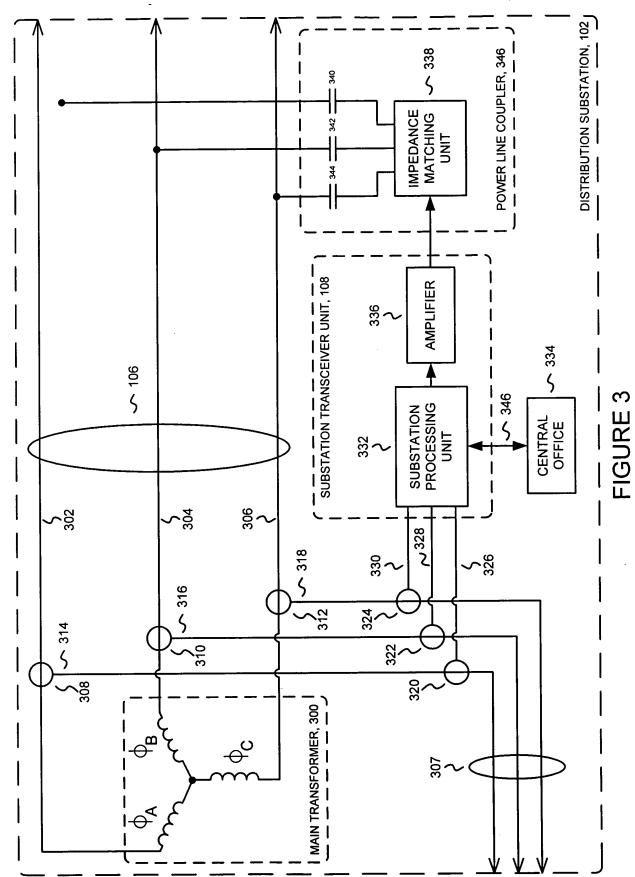
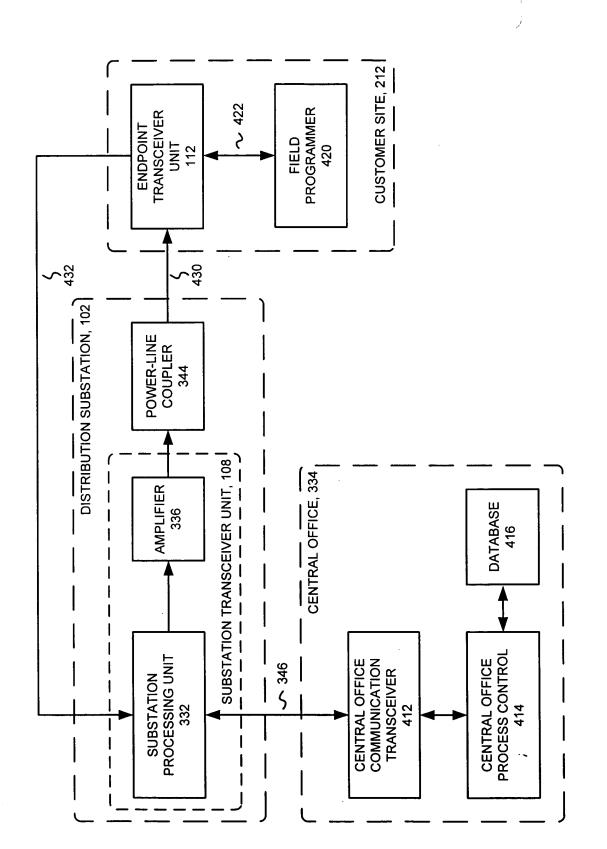


FIGURE 2





Inventor: Flen et al.

Docket No.: 11831.55US01
Title: ENDPOINT TRANSMITTER AND POWER GENERATION

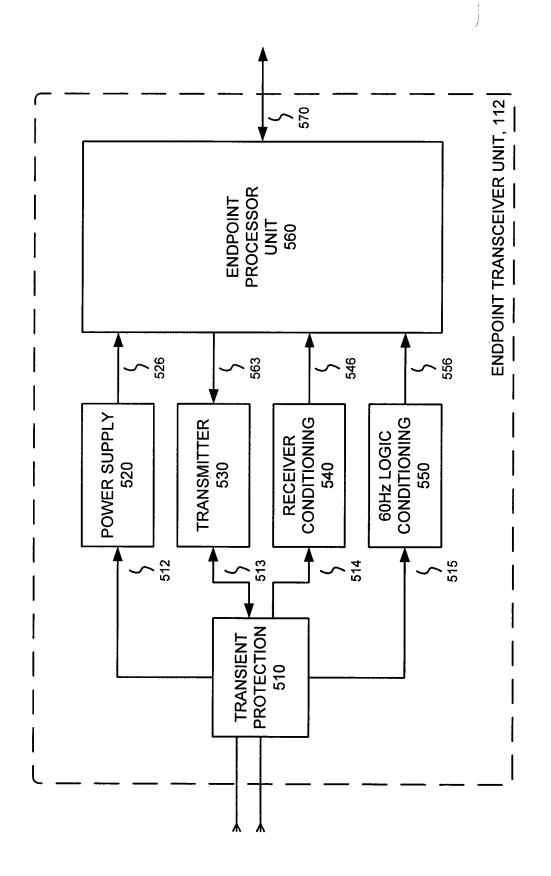


FIGURE 5

Inventor: Flen et al. Docket No.: 11831.55US01

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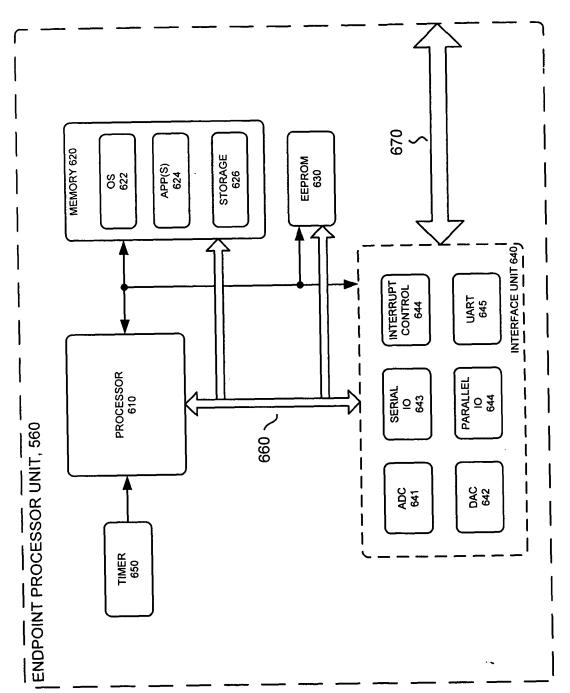
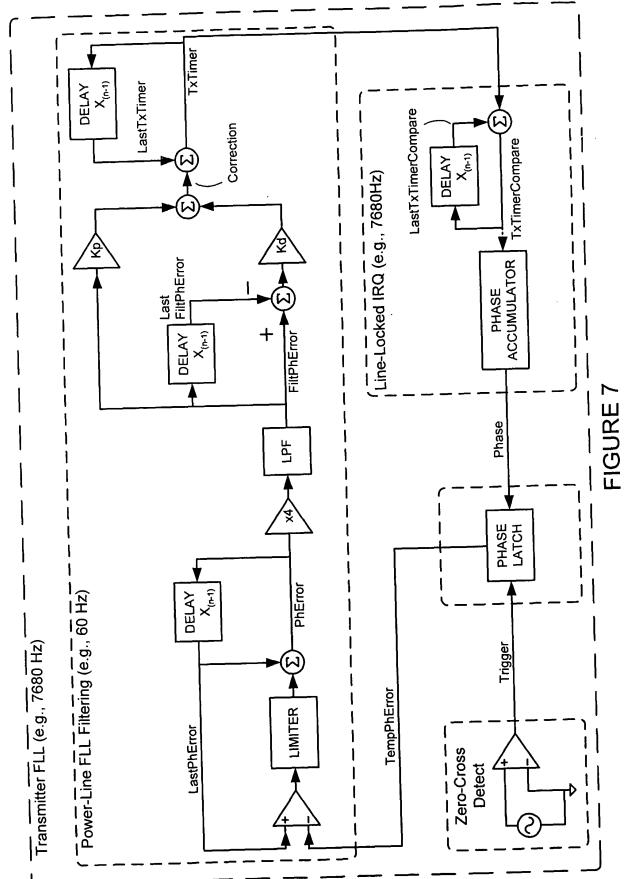


FIGURE 6



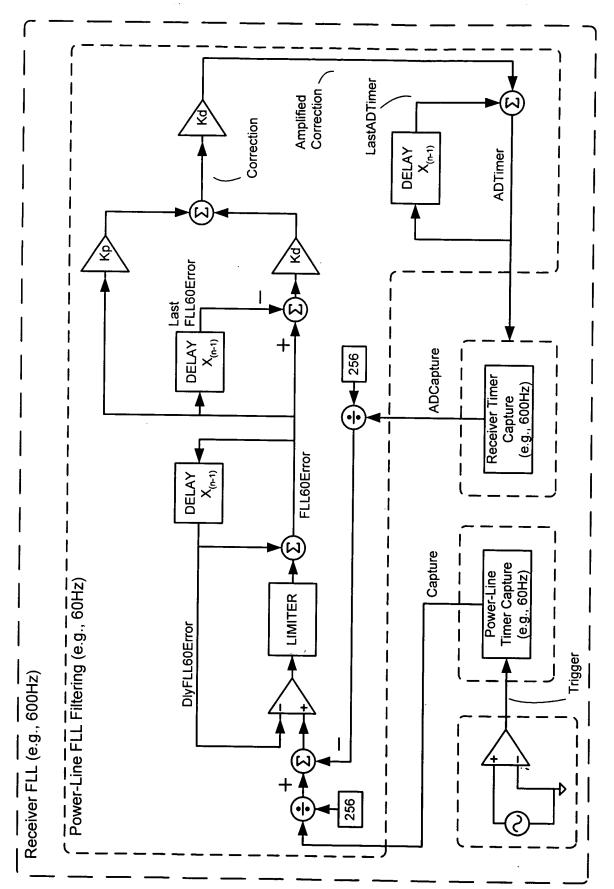


FIGURE 8

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Docket No.: 11831.55US01 Title: ENDPOINT TRANSMITTER AND POWER GENERATION

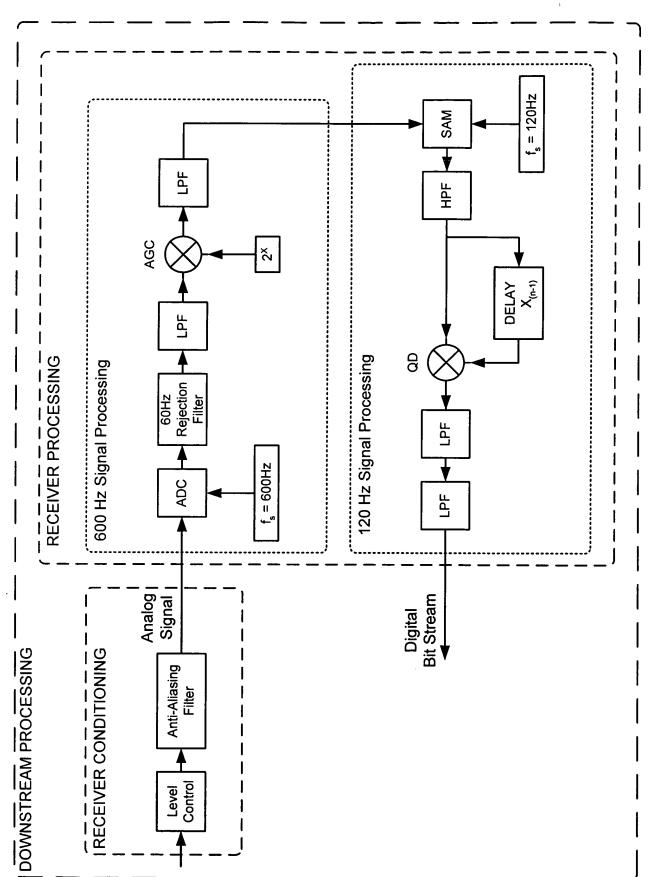
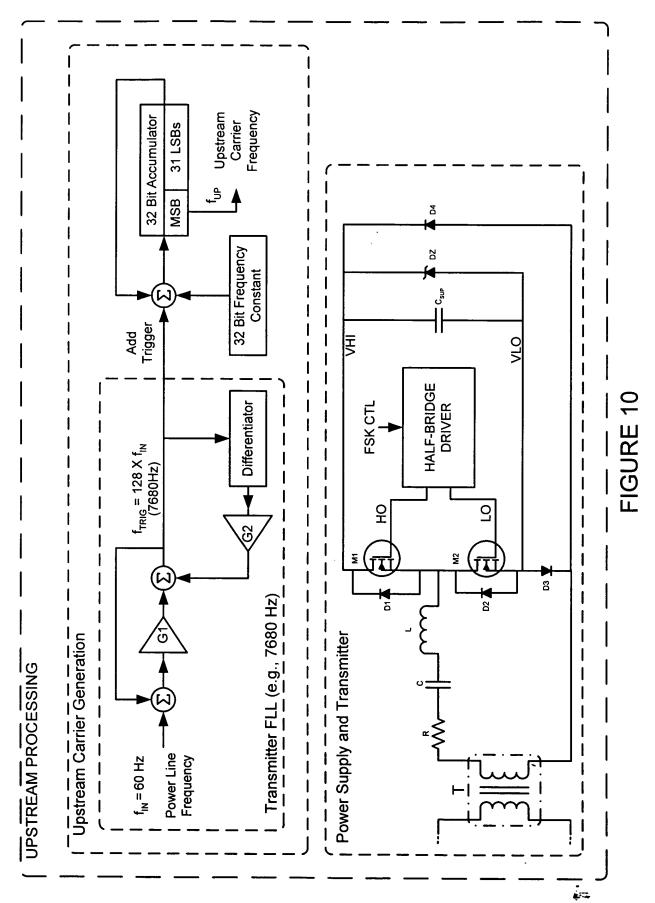


FIGURE 9



Inventor: Flen et al. Docket No.: 11831.55US01

Title: ENDPOINT TRANSMITTER AND POWER GENERATION

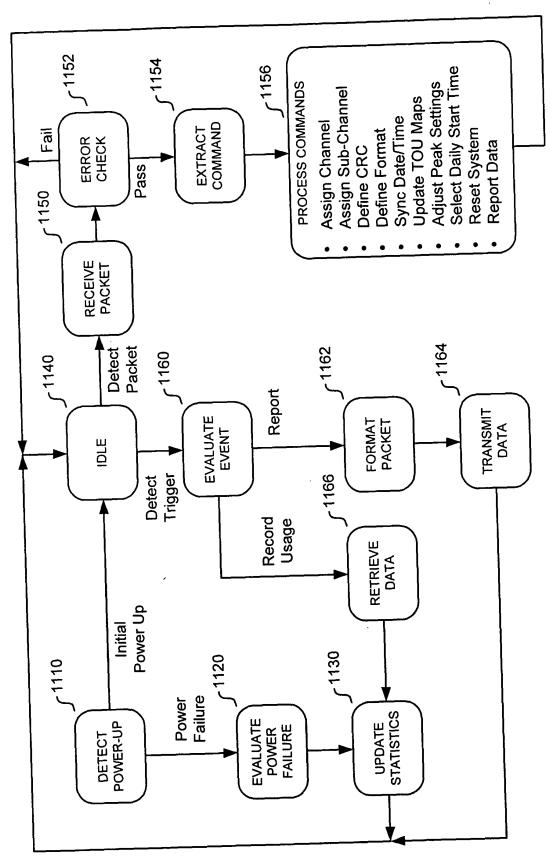


FIGURE 11

Inventor: Flen et al.

Docket No.: 11831.55US01
Title: ENDPOINT TRANSMITTER AND POWER GENERATION
SYSTEM

	T	Check		
			Data ID5	
			Data ID4 Data ID5	
1	ayload	19 bits)	Data ID3	
	Data Payload	(up to 49 bits)	Data ID2	
			Data ID1	
			Data ID0	
		Health	Flag (1)	
		Async	Flag (1)	

0	(Sec. 14	Description
DataiD	Name	
0	II S	Empty Packet or ending packet
-	KWH1	Current power usage meter reading in units of kWH
2	TOU1	Null or the total number of kWH accumulated in the TOU1 bucket
3	TOU2	Null or the total number of kWH accumulated in the TOU2 bucket
4	TOU3	Null or the total number of kWH accumulated in the TOU3 bucket
5	TOU4	Null or the total number of kWH accumulated in the TOU4 bucket
9	Peak1	Total number of kWH used at the recorded peak time for TOU1 Map
7	Peak2	Total number of kWH used at the recorded peak time for TOU2 Map
8	Peak3	Total number of kWH used at the recorded peak time for TOU3 Map
6	Peak4	Total number of kWH used at the recorded peak time for TOU4 Map
10	Peak1Time	Time of peak demand for TOU1 Map
11	Peak2Time	Time of peak demand for TOU2 Map
12	Peak3Time	Time of peak demand for TOU3 Map
13	Peak4Time	Time of peak demand for TOU4 Map
14	Peak1Date	Date for Peak1 Demand
15	Peak2Date	Date for Peak2 Demand
16	Peak3Date	Date for Peak3 Demand
17	Peak4Date	Date for Peak4 Demand
18	LastPeak1	Last Peak1 Demand
19	LastPeak2	Last Peak2 Demand
20	LastPeak3	Last Peak3 Demand
21	LastPeak4	Last Peak4 Demand
22	LastPeak1Time	Time of Last Peak1 demand
23	LastPeak2Time	Time of Last Peak2 demand
24	LastPeak3Time	Time of Last Peak3 demand
25	LastPeak4Time	Time of Last Peak4 demand
26	LastPeak1Date	Date of Last Peak1 demand
27	LastPeak2Date	Date of Last Peak2 demand
28	LastPeak3Date	Date of Last Peak3 demand
29	LastPeak4Date	Date of Last Peak4 demand
30 - 41		Reserved

Inventor: Flen et al. Docket No.: 11831.55US01

Title: ENDPOINT TRANSMITTER AND POWER GENERATION SYSTEM

	DataID	Name	Description
L	42	Momint	Total number of momentary interruptions
	43	MomEvent	Total number of momentary event interruptions
L	44	SusInt	Total number of sustained interruptions
<u> </u>	45	SusIntDur	Total accumulated time for sustained interruptions
L	46	ConfigStatusFlags	Configuration status flags
Ц	47	SerNum	An internal serial number for the endpoint
<u> </u>	48	ModelID	Identifies the model type or model family for the endpoint
L	49	HWRev	Hardware revision ID for the endpoint
L	20	SWVersion	Software version info for the endpoint
<u> </u>	51	FlashCRC	CRC of application code
L	52	ReqID	Request ID of last async-type request received by the endpoint
L	53	LastResetTime	Time of last demand reset in minutes
L	54	LastResetDay	Day of the last demand reset in day-of-year format
Ц	22	Group 0	Group Address that the endpoint subscribes to for downstream reception
	26	Group 1	Group Address that the endpoint subscribes to for downstream reception
Ц_	22	Group 2	Group Address that the endpoint subscribes to for downstream reception
	58	Group 3	Group Address that the endpoint subscribes to for downstream reception
	59	Group 4	Group Address that the endpoint subscribes to for downstream reception
L	09	Group 5	Group Address that the endpoint subscribes to for downstream reception
Щ	61	Group 6	Group Address that the endpoint subscribes to for downstream reception
	62	Group 7	Group Address that the endpoint subscribes to for downstream reception
	63	PacketStartTime	Time of the day that the first bit of the upstream transmission starts
	64	ElectricMetTime	The time at which electric metrology readings are captured - time in minutes
L	65	MomLogPtr	Memory address pointer for storing the next detected momentary interrupt
L	99	TxConst0	Transmitter upstream frequency constant for logic 0 modulation
L	29	TxConst1	Transmitter upstream frequency constant for logic 1 modulation
<u> </u>	. 68	TxSubID (Sub-channel ID assigned for upstream communications
	69 - 129		Reserved
	130	InternalBIT	Built in test flag for internal faults
	131	InterfaceBIT	Built in test flag for interface faults
	132	SystemStatus	Built in status flags

TABLE 2

133 Minutes The current endpoint time in minutes (0 - 1439, 0 = Midnight) 134 DayOfWeek The current endpoint day of the week (0 - 6, 0 = Sunday) 135 DayOfWeek The current endpoint day of the week (0 - 6, 0 = Sunday) 136 TxBuffer A variable length buffer that is internally used by the endpoint 137 SublDCount Number of SublDs received by the endpoint since power-up 138 SequenceNum The sequence number of the current since power-up 139 SequenceNum The sequence number of the current since power-up 140 The Current sub-channel ID for the current downstream transmission 141 Demand Instantaneous demand recorded by the endpoint over the last peak demand internal tannerstature of the endpoint since power-up 140 SublD Current sub-channel ID for the current downstream transmission 141 Internated maximum level for black while the disk is in the black state 142 WhiteFilter Filtered maximum level for black while the disk is in the black state 143 BlackFilter Filtered maximum level for black while the disk is in the black state 144 WhiteFiltershold Threshold above which the disk state is considered white AcClevel OptoMax Maximum reading for FilteredOpto Plack Minimum reading for FilteredOpto Filtere	DataID	Name	Description
DayOfWeek DayOfYear TxBuffer SubIDCount SequenceNum Temperature SubID Demand WhiteFilter WhiteFilter WhiteFilter WhiteFilter WhiteFilter OpticMax FilteredOpto KhConst AGCLevel MeterGroupCRC BlackMin WhiteMax OptoSample KWHAccumulator Kp60 Kd60 Kd60 FLL7680UnLckCt FLL7680UnLckMax	133	Minutes	The current endpoint time in minutes (0 - 1439, 0 = Midnight)
DayOfYear TxBuffer SubIDCount SequenceNum Temperature SubID Demand WhiteFilter BlackFilter BlackThreshold OpticMax FilteredOpto KhConst AGCLevel MeterGroupCRC BlackMin WhiteMax OptoSample KWHAccumulator Kp7680 Kd60 Kd60 FLL7680UnLckCt FLL7680UnLckMax	134	DayOfWeek	The current endpoint day of the week (0 - 6, 0 = Sunday)
SubIDCount SubIDCount SequenceNum Temperature SubID Demand WhiteFilter BlackFilter BlackFilter BlackFilter WhiteThreshold OpticMax FilteredOpto KhConst AGCLevel MeterGroupCRC BlackMin WhiteMax OpticSample KWHAccumulator Kp7680 Kd60 Kd60 FLL7680UnLckCt FLL7680UnLckMax	135	DayOfYear	The current endpoint day of the year (0-365, 0 = Jan 1)
SequenceNum Temperature SubID Demand WhiteFilter WhiteFilter WhiteThreshold BlackThreshold OptoMin OptoMin OpticMax FilteredOpto KhConst AGCLevel MeterGroupCRC BlackMin WhiteMax OptoSample KWHAccumulator Kp7680 Kd7680 Kd60 FLL7680UnLckCt FLL7680UnLckMax	136	TxBuffer	A variable length buffer that is internally used by the endpoint
SequenceNum Temperature SubID Demand WhiteFilter BlackFilter BlackThreshold OpticMax FilteredOpto KhConst AGCLevel MeterGroupCRC BlackMin WhiteMax OptoSample KWHAccumulator Kp7680 Kd60 Kd60 FLL7680UnLckCt FLL7680UnLckMax	137	SubIDCount	Number of SubIDs received by the endpoint since power-up
SubID SubID Demand WhiteFilter WhiteFilter WhiteThreshold BlackThreshold OptoMin OpticMax FilteredOpto KhConst AGCLevel MeterGroupCRC BlackMin WhiteMax OptoSample KWHAccumulator Kp7680 Kd7680 Kd60 FLL7680UnLckCt FLL7680UnLckMax	138	SequenceNum	The sequence number of the currently loaded packet
SubID Demand WhiteFilter BlackFilter WhiteThreshold OpticMax FilteredOpto KhConst AGCLevel MeterGroupCRC BlackMin WhiteMax OptoSample KWHAccumulator Kp7680 Kd60 Kd60 Kd60 FLL7680UnLckCt	139	Temperature	The current internal temperature of the endpoint
WhiteFilter BlackFilter BlackThreshold DoticMax FilteredOpto KhConst AGCLevel MeterGroupCRC BlackMin WhiteMax OptoSample KWHAccumulator Kp7680 Kd60 Kd60 FLL7680UnLckCt FLL7680UnLckMax	140	SubiD	Current sub-channel ID for the current downstream transmission
WhiteFilter BlackFilter WhiteThreshold BlackThreshold OptoMin OpticMax FilteredOpto KhConst AGCLevel MeterGroupCRC BlackMin WhiteMax OptoSample KWHAccumulator Kp7680 Kd7680 Kd60 Kd60 FLL7680UnLckCt	141	Demand	Instantaneous demand recorded by the endpoint over the last peak demand interval
BlackFilter WhiteThreshold BlackThreshold OpticMax FilteredOpto KhConst AGCLevel MeterGroupCRC BlackMin WhiteMax OptoSample KWHAccumulator Kp7680 Kd60 Kd60 Kd60 FLL7680UnLckCt	142	WhiteFilter	Filtered maximum level for white while the disk is in the white state
WhiteThreshold BlackThreshold OptoMin OpticMax FilteredOpto KhConst AGCLevel MeterGroupCRC BlackMin WhiteMax OptoSample KWHAccumulator Kp7680 Kd7680 Kd60 Kd60 Kc60 FLL7680UnLckCt	143	BlackFilter	Filtered minimum level for black while the disk is in the black state
BlackThreshold OpticMax CopticMax FilteredOpto KhConst AGCLevel MeterGroupCRC BlackMin WhiteMax OptoSample KWHAccumulator Kp60 Kd7680 Kd60 Kd60 Kc60 FLL7680UnLckCt	144	WhiteThreshold	Threshold above which the disk state is considered white
OpticMax	145	BlackThreshold	Threshold below which the disk state is considered black
PilteredOpto KhConst AGCLevel AGCLevel MeterGroupCRC BlackMin WhiteMax OptoSample KWHAccumulator Kp7680 Kd7680 Kd60 Kd60 Kc60 FLL7680UnLckCt	146	OptoMin	Minimum reading for FilteredOpto
FilteredOpto KhConst AGCLevel MeterGroupCRC BlackMin WhiteMax OptoSample KWHAccumulator Kp60 Kd7680 Kd60 Kd60 Kd60 FLL7680UnLckCt	147	OpticMax	Maximum reading for FilteredOpto
KhConst AGCLevel MeterGroupCRC BlackMin WhiteMax OptoSample kWHAccumulator Kp7680 Kp60 Kp60 Kp60 Kp60 FLL7680UnLckCt	148	FilteredOpto	Filtered optic reading that is used to determine the disk state
AGCLevel MeterGroupCRC BlackMin WhiteMax OptoSample KWHAccumulator Kp7680 Kd7680 Kd60 Kd60 Kc60 FLL7680UnLckCt	149	KhConst	32-bit constant
MeterGroupCRC BlackMin WhiteMax OptoSample kWHAccumulator Kp7680 Kd7680 Kd60 Kd60 Kd60 FLL7680UnLckCt	150	AGCLevel	8-bit AGC setting, where the gain of the front end is set to 2 ^{AGCLevel}
BlackMin WhiteMax	151	MeterGroupCRC	The CRC of the Meter and Group configuration settings
WhiteMax OptoSample kWHAccumulator Kp7680 Kd7680 Kp60 Kd60 Kc60 FLL7680UnLckCt FLL7680UnLckMax	152	BlackMin	Minimum reading while disk is in a black state - unfiltered
OptoSample Unit kWHAccumulator 32- Kp7680 8 B Kd7680 8 B Kp60 8 B Kc60 8 B Kc60 8 B FLL7680UnLckCt Unit FLL7680UnLckMax Max	153	WhiteMax	Maximum reading while disk is in a white state - unfiltered
kWHAccumulator 32- Kp7680 8 B Kd7680 8 B Kp60 8 B Kc60 8 B FLL7680UnLckCt Unl FLL7680UnLckMax Ma	154	OptoSample	Unfiltered Optic reading
Kp7680 8 B Kd7680 8 B Kp60 8 B Kd60 8 B Kc60 8 B FLL7680UnLckCt Unit FLL7680UnLckMax Ma	155	kWHAccumulator	32-bit partial kWH accumulator in units of 1/224 of a kWH
Kd7680 8 B Kp60 8 B Kd60 8 B Kc60 8 B FLL7680UnLckMax Max	156	Kp7680	8 Bit 7680 Hz FLL proportional error gain coefficient
Kp60 8 B Kd60 8 B Kc60 8 B FLL7680UnLckCt United National Mark	157	Kd7680	8 Bit 7680 Hz FLL differential error gain coefficient
Kd60 8 B Kc60 8 B FLL7680UnLckMax Max	158	Kp60	8 Bit 60 Hz FLL proportional error gain coefficient
Kc60 8 B FLL7680UnLckCt Unl FLL7680UnLckMax Ma	159	Kd60	8 Bit 60 Hz FLL differential error gain coefficient
FLL7680UnLckCt Uni	160	Kc60	8 Bit 60 Hz FLL common gain coefficient
FLL7680UnLckMax Max	161	FLL7680UnLckCt	Unlocked counter for 7680 Hz FLL
	162	FLL7680UnLckMax	Max since power-up of Unlocked counter for 7680 Hz FLL

Reserved 56-bit constant of all 1's for filling upstream packets when necessary Max since power-up of Unlocked counter for 7680 Hz FLL Description Unlocked counter for 60 Hz FL FLL60UnLckMax FLL60UnLckCt Name OnesFill 165 - 254 255

DataID 163 164

Inventor: Flen et al. Docket No.: 11831.55US01

SYSTEM

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